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Pipeline & Gas Journal

International Pipeline & Gas Utility Operations, Design & Maintenance

134th Year

August 1992

INTERNATIONAL REPORT

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CIS
4520 East-West Highway
Bethesda MD 20814

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PIPELINE & GAS JOURNAL
USPS 040 970 (ISSN 0032-0188) is published monthly by Oildom Publishing Co. of Texas, Inc., 3314 Mercer St., Houston, Texas 77027. Circulation office: 1 E. First St., Duluth, Minn: 55802.

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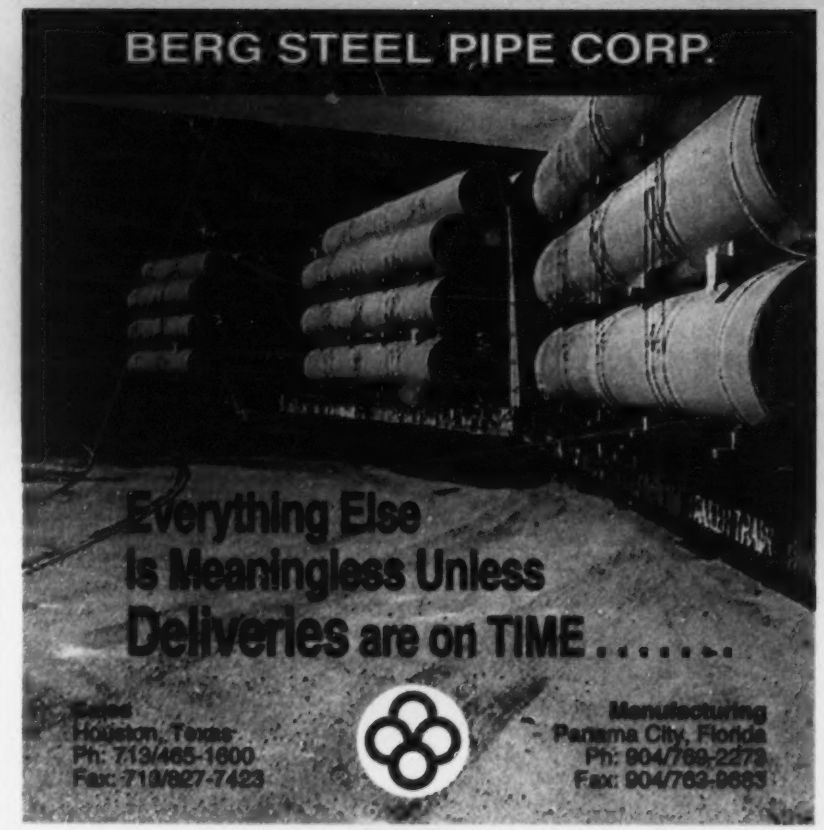
Subscription rates are: one year $15, two years $20 in the United States; one year $30, two years $40 in Canada; one year $45, two years $60 in all other countries. One year airmail is $125. Current year single issue copies (pre-paid only): $5 plus postage. Back issues one year old or more: $10 plus postage. November Annual Directory of Pipelines issue: $60 plus postage. Cumulative editions of this publication are available in microfilm from University Microfilms Inc., 300 N. Zeeb Rd., Ann Arbor, Mich. 48106. Telephone: (313) 761-4700

Second class postage paid at Duluth, Minn., and additional mailing offices. Postmaster send address changes to: Pipeline & Gas Journal, PO Box 6369, Duluth, Minn. 55806.



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Published Continuously Since 1859 | August 1992 | Volume No. 219 Number 8

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New pipelines are being built around the world to deliver clean-burning natural gas and other hydrocarbon energies to a demanding marketplace. (Photo courtesy Press Construction Ltd.)

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World Pipeline Work Set For Rapid Growth

by P&GJ Staff

International pipeline construction has entered a fast-growth period, accelerated by the new political and economic realities around the world and increasing demand for natural gas, crude oil and refined petroleum products. Many projects are under way or in planning for completion in the mid- to late 1990s in Europe, South America, Asia and the Middle East.

PIPELINE & GAS JOURNAL's projection calls for construction or other work on 30,700 miles of new natural gas, crude oil and refined products pipelines in the 1992-93 period outside Canada and the U.S. These projects will cost an estimated $30 billion-plus.

Natural gas pipelines will comprise most of the mileage, accounting for almost 23,000 miles at an estimated cost of $26.3 billion. Products pipelines, planned or under construction, will add another 5,800 miles at a cost of $2.8 billion. Crude oil pipelines, at a minimum, will total 1,900 new miles at a cost of slightly under $1 billion.

Proposed pipeline projects, mostly those set for completion no earlier than the late 1990s, currently total 13,800 miles, at an estimated cost (1992 dollars) of $11 billion. Both these figures are certain to increase as innovative pipeliners seek new ways to deliver vital hydrocarbon energy to customers that might be thousands of miles from the producing fields.

Major projects under construction or planned include the expansion of the SNAM-ENEL Trans-Mediterranean gas pipeline from Algeria to Italy and Statoil's 681-mile Zeepipe system from the North Sea to Europe, costing some $750 million.

South America should see rapid expansion of its energy transportation grid, with several major pipelines set for construction in Argentina, Bolivia, Brazil and Colombia.

Asia will see substantial activity, with the third phase of Petronas' Peninsular Gas Project, along with large projects in China, Thailand and Indonesia.

In the Middle East, Iran has a major program for new oil and gas pipelines, and Kuwait is rebuilding much of its network.

Increased pipelining activity in Southeast Asia prompted Offshore Pipelines International Ltd. to move its semisubmersible, combination derrick-lay-barge DLB 423 to Malaysia. The refurbished vessel can work in depths to 2,000 ft and lay pipe to 48-in. diameter. The DLB 423 had been working in the Gulf of Mexico on several deep-water projects.

EUROPE

The concerns about a secure supply of gas for Europe have been exacerbated by fears that the long pipelines from Siberia might be vulnerable to political squabbles, and a looming gas shortage.

Ruhrgas AG said gas consumption in Western Europe may go up by 30% over the next 10 years, but a combination of factors might result in a severe gas supply shortage. Speaking at a recent conference in Norway, Dr. Burckhard Bergmann, chief of supply at Ruhrgas, said gas consumption in Western Europe could be 13.28 Tcf/yr by 2005, but predicts supplies will be short by 1.2 Tcf/yr.

Portugal's gasification program is proceeding, with the $600- million Phase 1 set for completion in 1994. Work includes a 250-mile pipeline to deliver Algerian natural gas to a power plant near Braga and a combined-cycle plant outside Lisbon. Portugal will begin importing LNG from Algeria at the rate of 64 Bcfy in 1996.

The Finnish government is considering construction of a $200- million pipeline that would cross the Gulf of Bothnia on its way to Sweden. The 250-mile, 20-in. pipeline would connect Rihimaki, Finland, and Gaevie, Sweden.

Gas demand in the Republic of Ireland will be met by gas delivered through a new $400-million, 177-mile

pipeline from Scotland, set for completion in late 1993. The pipeline consists of a 40-mile onshore pipeline from a connection with British Gas' national transmission system at Moffat, in western Scotland, to the coast at Brighouse Bay. From there, a 137-mile subsea pipeline would cross the Irish Sea to a landfall at Loughshinny, north of Dublin. Bord Gais Eireann's pipeline will have an initial capacity of 100 Bcfy, with a maximum capacity of 175 Bcfy.

British Gas will build a $200-million, 24-in. pipeline to deliver gas to a power plant it recently purchased in Northern Ireland and will convert to natural gas. The line will begin near Castle Douglas in Scotland and cross the ocean on its way to the power plant north of Belfast.

Work will be completed next year on a 435-mile gas pipeline from the Bulgaria-Greece border to Salonica and Athens. The Greek government is also considering a 750-mile gas pipeline from Russia to northern Greece.

In Germany, Wintershall AG is building a 350-mile gas pipeline from Emden to Ludwigshafen for $400 million. The line is to be completed by late 1993. When operational, the Midal Pipeline will be part of an integrated network developed by Wintershall and Russia's Gasprom that includes the Stegal pipeline and a gas storage facility.

European liquid pipeline activities include proposals for a 340-mile, 12-in. products pipeline from Wilhelmshaven, Germany, to Dresden; a 280-mile products pipeline from Hamburg, Germany, to Dresden; a 135-mile, 8-in. products pipeline from Almodovar, Spain, to Merida; a 300-mile, 12-in. products line in France for Spie Capag; and a 225-mile crude oil pipeline from northwestern Czechoslovakia to Germany.

Pipeline work is under way in Spain in anticipation of a 900- mile pipeline link with Algeria via Morocco and the Strait of Gibraltar. Activities include a 300-mile, 26-in. pipeline from Sevilla to Alicante, set for completion by the end of the year.

Activity is high in the North Sea, particularly in the UK and Norwegian sectors.

Statoil is going ahead with Phase II of its $3-billion Zeepipe project. Work will include a 186-mile, 40-in. line from Sleipner to Kollsnes, set for completion in 1996, and a 118-mile, 36-in. pipeline from the Heimdal Field to Kollsnes, set for completion in 1998.

Other Statoil projects include Europipe, a $1.5-billion pipeline from North Sea fields to Germany, and Haltenpipe, a 118-mile, 20-in. gas pipeline from the Haltenbank area to Tjeldebergadden.

International Pipeline Forecast / 1992-93

Type of Pipeline	Mileage	Cost
Natural Gas	22,835	$26.295billion
Refined Products	5,847	$2.788 billion
Crude Oil	1,859	$0.995 billion
TOTAL	30,541	$30.748 billion
FUTURE PROJECTS		
Total Mileage	13,781	$10.940 billion

SOUTH AMERICA

State oil companies in Bolivia and Brazil have agreed on the route of a proposed 1,400-mile, $1.5-billion gas pipeline. Petrobras said the section through Brazil will cost $1.2 billion to build, with Snamprogetti estimating a cost of $294 million for the Bolivian segment operated by Yacimiento Petroliferos. The system will consist of a 350-mile, 20-in. pipeline from producing fields near Santa Cruz, Bolivia, to the Brazilian border at Port Suarez. The pipeline will enter Brazil at Corumba and cross the states of Mato, Gross dul Sol, Sao Paulo, Parana, Santa Caterina and Rio Grande do Sol. The main segment from Santa Cruz to Sao Paulo will total some 1,180 miles, dividing into a new trunk pipeline near Campinas south to Porto Allegro with a branch line to an existing Rio de Janiero-Sao Paulo pipeline. A new 600-mile pipeline will be built from Rio de Janiero to Belo Horizonte.

Petroleos del Peru expects to complete several large gas pipelines in 1993. Work includes 364 miles of 26 in.; 300 miles of 10 in.; and 64 miles of 8 in.

AUSTRALIA

Contracts should be awarded soon for a 118-mile, $A180- million gas pipeline from the Jackson Field in southwest Queensland to Moomba in South Australia. Completion is set for 1994.

ASIA

Petroleum Authority of Thailand has approved construction of a second 500-mile, $705-million gas pipeline paralleling the existing system from fields in the Gulf of Thailand to the country's eastern seaboard. The first phase, set for completion in 1996, consists of a 264-mile, 36-in. subsea pipeline. The second phase includes construction of a 68-mile onshore line to a power plant at Chachoengsao.

The National Pipeline Research Society of Japan has proposed a $20-billion project to build a pipeline from Siberia and Sakhalin Island to Australia. The 16,800-mile pipeline would run through Japan, along the coast of China, to Thailand, Malaysia and Indonesia before terminating at Australia.

ARCO China has awarded a contract for engineering, procurement and project support services on two subsea pipelines to J.P. Kenny's Houston office as part of its $1.2- billion Yancheng gas field development project. The project includes a 480-mile pipeline from the gas field to Hong Kong, and a 60-mile pipeline from the Yancheng Field to Hainan Island.

MIDDLE EAST

Turkey's Botas is considering several extensions to the country's existing gas pipeline system. Proposals include a 620-mile line to the Mediterranean port of Iskenderun, near Syria; a 310-mile pipeline to Izmir on the Aegean; and a 210-mile pipeline along the Black Sea coast, linking Izmit with Eregh..**P&GJ**